

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/582,392
Filing Date: June 28, 2007
Inventor(s): Thomas N. Horsky et al.
Group Art Unit: 2821
Examiner Name: Souw, Bernard E.
Attorney Docket No.: 211843-00044
Title: Method and Apparatus for Extending
Equipment Uptime in Ion Implantation
Confirmation No.: 3848

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

COMMUNICATION

Sir:

This letter is directed to an issue raised subsequent to the Notice of Allowance mailed on June 2, 2010 and passed on by Examiner Souw in a voicemail on July 26, 2010. In order to clarify the record, this written communication is directed to that issue.

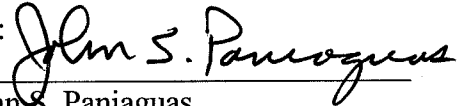
Specifically, as communicated by Examiner Souw, an issue was raised why a signed declaration by Wade Krull was filed in the above identified case. Apparently, the reference is to the Declaration filed on June 28, 2007 ("the June 2007 Declaration"). That Declaration included Thomas N. Horsky, Robert W. Milgate III, George P Sacco Jr. , Dale C. Jacobson and Wade A. Krull. Mr. Krull was listed on the last page, i.e. page 4 of the Declaration. An earlier declaration was filed on March 14, 2007 ("the March 2007 Declaration"). The March 2007 Declaration inadvertently did not include a fourth page which listed Mr. Krull. After the filing of the March 2007 Declaration, the undersigned became aware of the fact that the the March 2007 Declaration did not include Mr. Krull.

In response to the question about Mr Krull's declaration, the instant application is the national stage of International Patent Application No. PCT/US04/41525 ('the PCT application"). A copy of the cover page of the PCT application is enclosed, which illustrates that Mr. Krull is a co-inventor with Thomas N. Horsky, Robert W. Milgate III, George P Sacco Jr. and Dale C. Jacobson. Moreover, the Transmittal letter filed with the application on June 9, 2006 illustrates on Page 1 that Mr. Krull is an applicant along with the other co-inventors mentioned above. Page 2 of the Transmittal authorized the Commissioner to charge any additional fees to the undersigned's Deposit Account 50-1214.

The Notice of Missing Requirements was mailed on February 13, 2007. One of the missing requirements was a signed Declaration.. The Notice indicated a deadline of 2 months to provide the missing requirements. . As such, the deadline for submitting the missing requirements was April 13, 2007. Mr. Krull signed the Declaration on June 7, 2007, well past the original deadline. In as much as a correct Declaration that included Mr. Krull was submitted after the original deadline, a three month extension was charged to the undersigned's Deposit Account No. 50-1214 . Indeed, the fee was paid. A copy of an Electronic Acknowledgement Receipt and an Electronic Patent Application Fee Transmittal are enclosed which indicate a fee of \$1020 was charged to the undersigned's Deposit Account for a 3 month extension fee for the late filing of the declaration that included Mr. Krull.

As mentioned above, Mr. Krull is identified as an applicant, i.e inventor, in the PCT application. During the national stage, the undersigned did NOT request that Mr. Krull be removed as an inventor for any reason. Thus, it is clear that the filing of a Declaration that included Mr Krull was proper and that Mr. Krull continues to be an inventor in the national phase.

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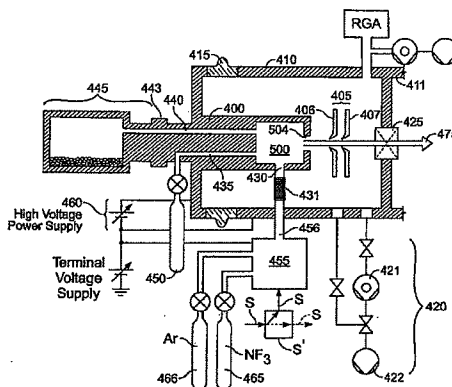
PCT

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60/529,343 12 December 2003 (12.12.2003) US
- (71) Applicant (for all designated States except US): **SEME-QUIP, INC.** [US/US]; 34 Sullivan Road, Unit 21, Billerica, MA 01862 (US).
- (72) Inventors; and
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
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[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR EXTENDING EQUIPMENT UPTIME IN ION IMPLANTATION



(57) Abstract: The service lifetime of an ion source is enhanced or prolonged by the source having provisions for *in-situ* etch cleaning of the ion source and of an extraction electrode, using reactive halogen gases, and by having features that extend the service duration between cleanings. The latter include accurate vapor flow control, accurate focusing of the ion beam optics, and thermal control of the extraction electrode that prevents formation of deposits or prevents electrode destruction. An apparatus comprises of an ion source for generating dopant ions for semiconductor wafer processing is coupled to a remote plasma source which delivers F or Cl ions to the first ion source for the purpose of cleaning deposits in the first ion source and the extraction electrode. These methods and apparatus enable long equipment uptime when running condensable feed gases such as sublimated vapor sources, and are particularly applicable for use with so-called cold ion sources. Methods and apparatus are described which enable long equipment uptime when decaborane and octadecaborane are used as feed materials, as well as when vaporized elemental arsenic and phosphorus are used, and which serve to enhance beam stability during ion implantation.

WO 2005/059942 A2

Electronic Acknowledgement Receipt

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Application Number:	10582392
International Application Number:	
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First Named Inventor/Applicant Name:	Thomas N. Horsky
Customer Number:	27160
Filer:	John S. Paniaguas/Anna Franz
Filer Authorized By:	John S. Paniaguas
Attorney Docket Number:	211843-00044
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The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 and 1.17	

File Listing:

Electronic Patent Application Fee Transmittal				
Application Number:		10582392		
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Title of Invention:		Method And Apparatus For Extending Equipment Uptime In Ion Implantation		
First Named Inventor/Applicant Name:		Thomas N. Horsky		
Filer:		John S. Paniaguas/Anna Franz		
Attorney Docket Number:		211843-00044		
Filed as Large Entity				
U.S. National Stage under 35 USC 371 Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with \$0 paid	1253	1	1020	1020